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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,936	08/09/2006	Masanori Tabata	4554-014	4514

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EXAMINER	
STELLING, LUCAS A	

ART UNIT	PAPER NUMBER
1776	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,936	TABATA ET AL.	
	Examiner	Art Unit	
	Lucas Stelling	1776	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 February 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-20,22,23 and 26-33* is/are pending in the application.

4a) Of the above claim(s) *14-18,20 and 26-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19, 22, 23, and 31-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2-15-11 has been entered.

2. Claims 1-13, 21, 24, and 25 are canceled. Claims 14-18, 20, and 26-30 are withdrawn as non-elected. Claims 19, 22, 23, and 31-33 are examined on the merits.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 19, 22, 23, and 31-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Regarding claims 19 and 31, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claims 22, 23, 32, and 33 are rejected for the dependence on an indefinite claim and for failure to resolve the indefiniteness. For

purposes of examination the portion of the preamble after "such as" is interpreted to be exemplary.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 19, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi in view of U.S. Patent No. 5,302,356 to Shadman et al. ("Shadman") and U.S. Patent No. 6,403,030 to Horton, III ("Horton").

10. As to claim 19, Noguchi teaches a water treatment apparatus comprising:

a wastewater treatment bath for treating wastewater **(See Noguchi Fig. 12, and edited Fig. 12 below, 'A' represents the treatment bath into which ozone is provided through 54 see also [0046])**;

an oxidizing reagent adding unit for adding an oxidizing reagent in the waste water treatment bath **(54 and see [0046])**, a pH of the wastewater treatment bath being within a range from 7-12 based upon an alkaline reagent;

an ultraviolet treatment unit **(63 is a photocatalytic reaction vessel, having an ultraviolet lamp 64)** for irradiating an ultraviolet ray comprising:

a reaction bath that receives the oxidized water fed from wastewater treatment bath **(63)**; and

an ultraviolet lamp **(64)** that irradiates an ultraviolet ray towards the oxidized water in the reaction; and

an acid treatment bath **(60)** having an acid adding unit **(61)** for adding acid, the acid treatment bath provided on a downstream side of the wastewater treatment bath and on an upstream side o the ultraviolet treatment unit**(See Noguchi Fig. 12 and see edited Fig. 12 below).**

Noguchi is different from claim 19, in that Noguchi does not teach a pump which feeds oxidized water from the wastewater treatment bath to the ultraviolet treatment unit reaction bath, or that the UV lamp is provided above the reaction bath.

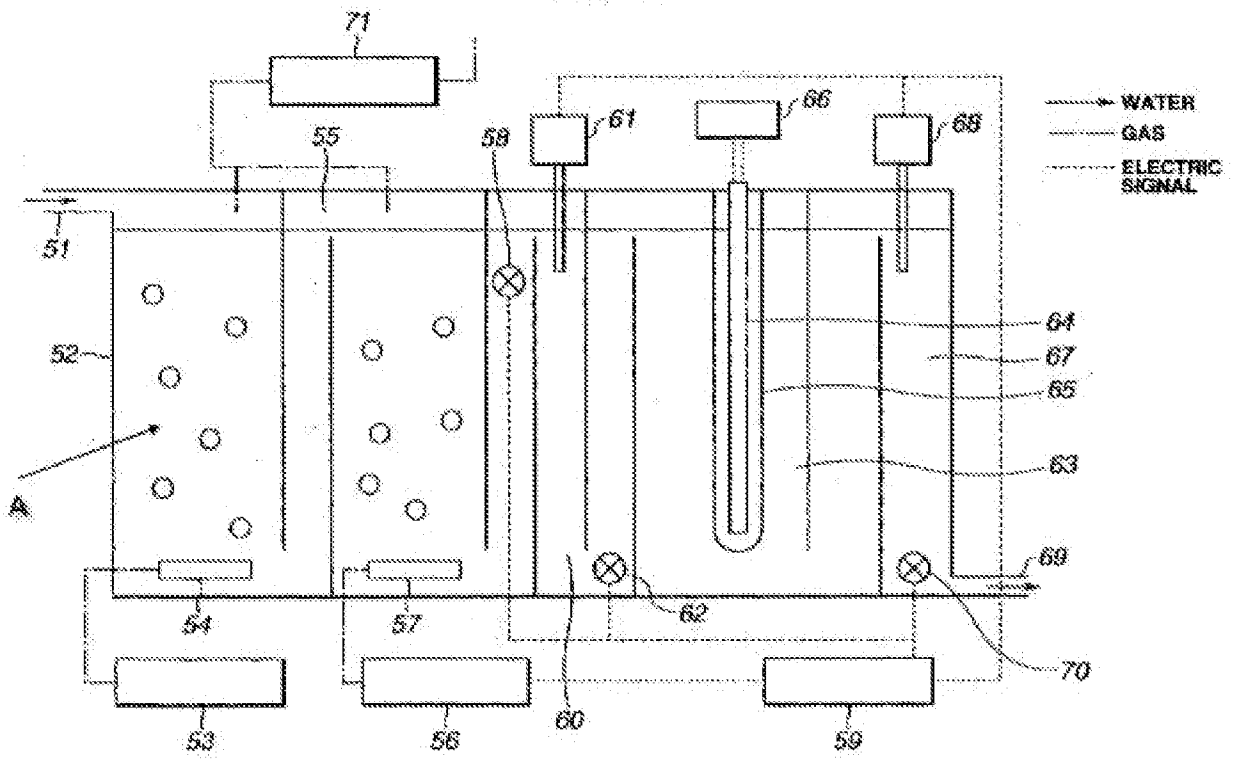
As to providing a pump which feeds oxidized wastewater from the treatment bath to the ultraviolet treatment unit reaction bath, Shadman is directed to a system for the treatment of water with UV in a UV reaction chamber **(See Shadman Fig. 1)**. Shadman provides a pump just upstream of the UV treatment chamber in order to control the supply of water to the UV reactor **(See 45 in Fig. 1 and see col. 3 lines 1-5)**. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of invention to provide a pump just upstream of the UV reaction chamber in Noguchi in order to control the supply of water to the UV reactor, as taught by Shadman; and in doing so, to provide a pump which delivers oxidized water from the treatment bath to the UV reaction bath, since the water entering the UV chamber has passed through the wastewater treatment bath.

As to providing the UV lamp above the reaction bath, Horton is directed to a water treatment system in which the UV lamp is provided above the liquid in a UV treatment reactor **(See Horton abstract, Figs 4 and 5; and see at least col. 9 lines 10-25 and generally col. 9 lines 10-45)**. Horton explains that the use of a UV source above the liquid to be treated reduces maintenance time since quartz sleeve will not become fouled **(See Horton col. 5 lines 20-35)**. Therefore it would have been obvious to a person having ordinary skill in the art at the time of invention to provide a UV light

above the UV treatment bath in Noguchi in order to provide a UV source requiring reduced maintenance as taught by Horton.

It is acknowledged that the embodiment of Fig. 12 in Noguchi does not mention removing persistence substances such as COD components contained in a wastewater produced and discharged in a gas purification process of a gasification facility; that the acid treatment bath has a pH of 2-4, that the wastewater treatment bath has a pH of 7-12, o r that the UV lamp decomposes COD components. However these limitations are drawn to applicant's intended use of the system and they do not serve to define it in terms of its structure. See MPEP 2114 and 2115. Noguchi is fully capable of meeting these limitations. Such a discharged liquid could be provided to the apparatus. The solution pH in the acid treatment bath can be made to between 2 and 4 with the acid adding unit, a pH adjusted water can be supplied to the inlet of the device thereby providing a pH in the wastewater treatment bath of between 7-12, and the UV light facilitates oxidation reactions which will reduce COD.

FIG.12



11. As to claims 22, Noguchi teaches the apparatus of claim 19, and these limitations of claims 22 are drawn to the functional limitations of an apparatus and the material operated on by the apparatus and do not serve to further patentably define the apparatus in terms of its structure. See MPEP 2114 and 2115. The treatment apparatus in Noguchi is fully capable of providing the amount of oxidizing agent to COD in claims 22 by adjusting the oxidizing introduction rate.

12. As to claims 23, Noguchi teaches the apparatus of claim 19, and these limitations of claims 23 are drawn to the functional limitations of an apparatus and the material operated on by the apparatus and do not serve to further patentably define the apparatus in terms of its structure. See MPEP 2114 and 2115. The treatment

apparatus in Noguchi is fully capable of providing the amount of oxidizing agent to COD in claims 23 since Noguchi does not mention that the deozonizer eliminates all ozone **(See Noguchi [0046])**. Instead, Noguchi teaches that the sensor detects an ozone concentration, and determines whether ozone removal is sufficient **(See Noguchi [0046])**; which is interpreted to mean that the apparatus is capable of letting ozone pass to the UV treatment tank, thereby providing an ozone to COD ratio even if a substantial amount of ozone is removed in the deozonizer.

13. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi in view of Shadman.

14. As to claim 31, Noguchi teaches a wastewater treatment apparatus comprising:

a wastewater treatment bath for treating the wastewater**(See Noguchi Fig. 12, and edited Fig. 12 below, 'A' represents the treatment bath into which ozone is provided through 54 see also [0046])**;

an oxidizing reagent adding unit for adding an oxidizing reagent in the wastewater treatment bath **(54 and see [0046])**;

an ultraviolet treatment unit for irradiating an ultraviolet ray **(63 is a photocatalytic reaction vessel, having an ultraviolet lamp 64)** comprising:

a reaction bath **(63)**that receives the oxidized water fed from the wastewater treatment bath; and

an ultraviolet lamp **(64)** that irradiates an ultraviolet ray toward the oxidized water in the reaction bath **(See Fig. 12, since 64 is placed inside 63 it will necessarily direct UV rays towards the water in the bath)**; and

an acid treatment bath **(60)** having an acid adding unit **(61)** for adding acid, the acid treatment bath provided on a downstream side of the wastewater treatment bath and on an upstream side of the ultraviolet treatment unit **(See Noguchi Fig. 12 and see edited Fig. 12 abovie)**.

Noguchi is different from claim 31 in that Noguchi does not teach the use of a pump that feeds an oxidized water oxidized in the wastewater treatment bath to the ultraviolet reaction bath. Shadman is directed to a system for the treatment of water with UV in a UV reaction chamber **(See Shadman Fig. 1)**. Shadman provides a pump just upstream of the UV treatment chamber in order to control the supply of water to the UV reactor **(See 45 in Fig. 1 and see col. 3 lines 1-5)**. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of invention to provide a pump just upstream of the UV reaction chamber in Noguchi in order to control the supply of water to the UV reactor, as taught by Shadman; and in doing so, to provide a pump which delivers oxidized water from the treatment bath to the UV reaction bath, since the water entering the UV chamber has passed through the wastewater treatment bath.

It is acknowledged that the embodiment of Fig. 12 in Noguchi does not mention removing persistence substances such as COD components contained in a wastewater produced and discharged in a gas purification process of a gasification facility; that the

acid treatment bath has a pH of 2-4, that the wastewater treatment bath has a pH of 7-12, o r that the UV lamp decomposes COD components. However these limitations are drawn to applicant's intended use of the system and they do not serve to define it in terms of its structure. See MPEP 2114 and 2115. Noguchi is fully capable of meeting these limitations. Such a discharged liquid could be provided to the apparatus. The solution pH in the acid treatment bath can be made to between 2 and 4 with the acid adding unit, a pH adjusted water can be supplied to the inlet of the device thereby providing a pH in the wastewater treatment bath of between 7-12, and the UV light facilitates oxidation reactions which will reduce COD.

15. As to claims 32, Noguchi teaches the apparatus of claim 31, and these limitations of claims 32 are drawn to the functional limitations of an apparatus and the material operated on by the apparatus and do not serve to further patentably define the apparatus in terms of its structure. See MPEP 2114 and 2115. The treatment apparatus in Noguchi is fully capable of providing the amount of oxidizing agent to COD in claims 32 by adjusting the oxidizing introduction rate.

16. As to claims 33, Noguchi teaches the apparatus of claim 31, and these limitations of claims 33 are drawn to the functional limitations of an apparatus and the material operated on by the apparatus and do not serve to further patentably define the apparatus in terms of its structure. See MPEP 2114 and 2115. The treatment apparatus in Noguchi is fully capable of providing the amount of oxidizing agent to COD in claims 33. Noguchi does not mention that the deozonizer eliminates all ozone **(See Noguchi [0046])**. Instead, Noguchi teaches that the sensor detects an ozone

concentration, and determines whether ozone removal is sufficient **(See Noguchi [0046])**; which is interpreted to mean that the apparatus is capable of letting ozone pass to the UV treatment tank, thereby providing an ozone to COD ratio even if a substantial amount of ozone is removed in the deozonizer.

Response to Arguments

17. Applicant's arguments filed 2-15-11 have been fully considered but they are not persuasive.

18. Applicant's arguments with respect to claims 19, 22, 23, and 31-33 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's argument that Noguchi does not mention reducing COD components in gasified wastewater, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Stelling whose telephone number is (571)270-3725. The examiner can normally be reached on Monday through Friday 9:00AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Las 4-4-11

/Nam X Nguyen/
Supervisory Patent Examiner, Art Unit 1753